

Message Text

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SUBJECT: BACKGROUND INFORMATION ON FOREIGN ENERGY PROGRAMS
INDIAN ENERGY R AND D PRIORITIES

REF: (A) STATE 301432, (B) NEW DELHI A-319

1. THE REQUESTED INFORMATION ON INDIAN ENERGY R AND D PRIORITIES AND ON BUDGET FOR SUCH ACTIVITIES, IS GIVEN IN THIS INTERIM REPLY TO REFTEL (A). INFORMATION ON OTHER ASPECTS OF THE INDIAN PROGRAMS IN ENERGY WILL FOLLOW BY SEPTTEL.

INDIAN ENERGY R AND D PRIORITIES

2. GOI HAS YET TO FORMULATE A NATIONAL ENERGY POLICY, WHILE EXPERTS CONTINUE TO DIFFER ON PRIORITIES FOR VARIOUS ENERGY RESOURCES. A COMMITTEE OF SECRETARIES OF THE CONCERNED MINISTRIES IS CURRENTLY ENGAGED IN IDENTIFYING PRIORITIES AND ENSURING COORDINATION IN ENERGY R AND D.

FUEL POLICY COMMITTEE REPORT

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3. IN THE INTERIM, THE VALUABLE AUGUST 1974 REPORT OF THE

GOI FUEL POLICY COMMITTEE HAS OUTLINED A 15 YEAR NATIONAL POLICY RECOMMENDING ENERGY R AND D PROGRAMS DIRECTED TOWARD INCREASING EFFICIENCY IN FUEL UTILIZATION, SUBSTITUTION OF OIL PRODUCTS BY COAL OR COKE, ECONOMIC TRANSFER OF ENERGY OVER LONG DISTANCES, PRODUCTION OF CHEAP COAL FUELS FOR DOMESTIC USE, BETTER MINING TECHNIQUES AND DEVELOPMENT OF NEW SOURCES OF ENERGY.

4. THE COMMITTEE HOWEVER FELT THAT NON-CONVENTIONAL ENERGY FORMS ARE UNLIKELY TO PROVIDE A LARGE SEGMENT OF ENERGY SUPPLY IN THE NEXT TWO DECADES. IT HAS THEREFORE RECOMMENDED PRIORITY FOR R AND D PROGRAMS IN DEVELOPING THE FOLLOWING TECHNOLOGIES: A) FAST BREEDER REACTORS; B) BETTER BOILER DESIGNS TO REDUCE OIL CONSUMPTION IN THERMAL POWER PLANTS; C) POWER PLANTS BASED ON FLUIDIZED BED TECHNOLOGY; D) SYNTHETIC NATURAL GAS PRODUCTION BY COAL GASIFICATION; AND E) PRODUCTION OF CHEAP DOMESTIC SMOKELESS FUELS.

5. SOME OF THE R AND D BUDGETS IDENTIFIED BY THE COMMITTEE INCLUDE DEVELOPMENT OF: A) A PROTOTYPE 500 MW THERMAL POWER PLANT; B) COMBINED GAS TURBINE - STEAM TURBINE PLANTS TO INCREASE EFFICIENCY OF COAL UTILIZATION IN THERMAL PLANTS; C) A 5 MW MAGNETOHYDRODYNAMICS (MHD) PLANT TO STUDY THE FEASIBILITY OF INSTALLING COMMERCIAL SCALE PLANTS; D) FORMED COKE PROCESS BASED ON NON-COKING COALS; E) HYDROCRACKING OF COAL TO PROCESS HEAVY END PRODUCTS IN A REFINERY; F) DEMONSTRATION AND PILOT PLANTS TOWARD DESIGNING A COMMERCIAL PLANT FOR CONVERSION OF COAL TO OIL; AND G) COAL GASIFICATION AND PIPELINE TRANSPORT OF COAL GAS TO STUDY THEIR COMMERCIAL FEASIBILITY.

6. RECOGNIZING THAT UNCONVENTIONAL FORMS OF ENERGY MAY ACQUIRE SIGNIFICANCE SOMETIME IN THE FUTURE, THE COMMITTEE HAS ALSO RECOMMENDED THE FOLLOWING R AND D PROGRAMS:

(A) SOLAR ENERGY: A) DEVELOPMENT OF THIN FILM TECHNOLOGY; B) CONVERSION OF WASTES AND ALGAE INTO GASEOUS FUEL AND METHANE; AND C) DEVELOPING LOW COST SOLAR WATER HEATERS, DISTILLATION UNITS AND DEVELOPING TECHNIQUES FOR DRYING AND STORAGE OF GRAINS.

(B) WIND POWER: DATA COLLECTION ON TIDAL MOVEMENT.

(C) CHEMICAL ENERGY: A) DEVELOPMENT WORK ON BATTERY POWERED UNCLASSIFIED

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LIGHT VEHICLES, AND B) FUEL CELL TECHNOLOGY FOR USE IN REMOTE VILLAGES.

GOI NATIONAL COMMITTEE ON SCIENCE AND TECHNOLOGY RECOMMENDATIONS:

7. BY AND LARGE THE RECOMMENDATIONS OF THE FUEL POLICY COMMITTEE ARE PARALLEL TO THE ONES MADE ABOUT THE SAME TIME BY THE NATIONAL COMMITTEE ON SCIENCE AND TECHNOLOGY (NCST), EXCEPT THAT THE NCST HAS LAID MORE EMPHASIS ON THE DEVELOPMENT OF THE

NON-CONVENTIONAL SOURCES OF ENERGY. ADDITIONALLY, THE NCST WOULD LIKE TO SEE GREATER R AND D EFFORT IN THE POWER SUPPLY AND EQUIPMENT SECTOR AND HAS THEREFORE IDENTIFIED PROJECTS IN THE DESIGN AND FABRICATION OF EXTRA HIGH VOLTAGE, AC AND DC EXPERIMENTAL TRANSMISSION LINES, LARGE SPECIAL PURPOSE TRANSFORMERS, SUPER-CONDUCTING DC MOTORS, PROCESS CONTROL AND AUTOMATION. THIS IS PARTICULARLY IMPORTANT SINCE ACCORDING TO JANUARY 13, 1976 STATEMENT BY THE MINISTER OF ENERGY K.C. PANT, ONLY 59 PERCENT OF THE INSTALLED POWER CAPACITY IN INDIA WAS UTILIZED IN 1974-75. INDIA HAS INVESTED, ACCORDING TO AN NCST ESTIMATE, NEARLY RS.56 BILLION (DOLLS 7 BILLION). IN THE POWER SECTOR TO DATE. THE NCST IS PUBLISHING A DETAILED REPORT ON RECOMMENDED R AND D PROJECTS FOR THE FUEL AND POWER SECTOR WHICH MAY BE AVAILABLE IN FOUR TO SIX WEEKS.

ATOMIC ENERGY

8. IN THE FIELD OF ATOMIC ENERGY THE STRATEGY IS TO DEVELOP FAST BREEDER REACTOR TECHNOLOGY TO USE INDIA'S VAST DEPOSITS OF THORIUM IN CONJUNCTION WITH PLUTONIUM WHICH WILL BE PRODUCED IN THE PRESENT GENERATION OF URANIUM FUELLED HEAVY WATER REACTORS. FOR THIS A 10 MW FAST BREEDER TEST REACTOR IS UNDER CONSTRUCTION AT KALPAKKAM WITH FRENCH HELP.

AN ASSESSMENT

9. WE BELIEVE THAT THE GENERAL DIRECTIONS GIVEN BOTH BY THE FUEL POLICY COMMITTEE AND THE NCST FOR FUTURE R AND D PROGRAMS IN INDIA, WILL REMAIN BASICALLY THE SAME. IT APPEARS, HOWEVER THAT THERE WOULD BE GREATER EFFORTS IN HARNESSING SOLAR ENERGY AND IN THE COWDUNG GAS TECHNOLOGY (GOBAR GAS PLANT - 100 TO 1000 WATTS) THAN RECOMMENDED BY EITHER THE FUEL POLICY COMMITTEE OR THE NCST AS EVIDENCED BY PUBLIC ANNOUNCEMENTS OF TOP GOI POLICY MAKERS.

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ENERGY R AND D BUDGETS

10. ENERGY R AND D IS CONDUCTED BY VARIOUS LABORATORIES UNDER A MULTITUDE OF MINISTRIES AND IN MANY CASES A SEPARATE SUBJECT WISE BREAKDOWN OF THE R AND D EXPENDITURE IS NOT AVAILABLE. THE ONLY EXCEPTION IS NUCLEAR ENERGY, WHICH IS UNDER THE PURVIEW OF A SEPARATE MINISTRY.

11. THE INFORMATION ON INDIAN EXPENDITURES ON ENERGY RELATED S AND T PROGRAMS IN THE FOLLOWING TABLE IS BASED ON ALLOCATIONS MADE BY THE PLANNING COMMISSION, AS REPORTED IN THE NCST 5 YEAR S AND T PLAN AND THE 1974-75 REPORT OF THE GOI DEPARTMENT OF SCIENCE AND TECHNOLOGY. THESE HOWEVER ARE VERY TENTATIVE ESTIMATES.

TABLE (IN MILLION OF DOLLARS; DOLLAR 1 EQUAL TO RS.8)

SECTOR	FIFTH PLAN (1974-79)	1974-75
ALL S AND T	1291	139
FUEL AND POWER	229	16
ATOMIC ENERGY (R AND D)	141	24

12. INDIAN FISCAL YEAR 1974-75 STARTS APRIL 1, 1974 AND ENDS MARCH 31, 1975.

13. THE PROPOSED EXPENDITURE IN THE FUEL AND POWER SECTOR INCLUDES R AND D PROGRAMS IN MHD, GAS TURBINES, COAL GASIFICATION AND UNCONVENTIONAL SOURCES OF ENERGY. IN THE FIELD OF ATOMIC ENERGY, ABOUT DOLS 66 MILLION IS PROPOSED FOR THE REACTOR RESEARCH CENTRE AT KALPAKKAM FOR DEVELOPING FAST BREEDER TECHNOLOGY. (OUT OF THIS, DOLS 11 MILLION WAS SPENT DURING 1974-75. SAXBE

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